

We claim:

1. A method of increasing neural stem cell number, comprising providing an effective amount of an ovarian hormone to at least one neural stem cell under conditions which result in an increase in the number of neural stem cells.
2. The method of claim 1 wherein the neural stem cell is located in the brain of an animal.
3. The method of claim 2 wherein the neural stem cell is located in a subventricular zone of the brain.
4. The method of claim 1 wherein the ovarian hormone is administered to a ventricle of the brain.
5. The method of claim 1 wherein the ovarian hormone is administered systemically.
6. The method of claim 1 wherein the animal is an adult animal.
7. The method of claim 1 wherein the neural stem cell is cultured *in vitro*.
8. The method of claim 1 wherein the ovarian hormone is an estrogen.
9. The method of claim 1 wherein the ovarian hormone is a progestin.
10. The method of claim 1 wherein the ovarian hormone is a combination of estrogen and progestin.

11. A method of identifying a gene which participates in ovarian hormone induced neural stem cell increase, comprising:
- (a) providing a culture of neural stem cells;
  - (b) incubating the culture of neural stem cells in the presence of an ovarian hormone;
  - (c) preparing cDNA from neural stem cells cultured without the ovarian hormones and neural stem cells of step(b), respectively; and
  - (d) comparing the cDNAs in step (c) to identify cDNAs which are induced or suppressed by the ovarian hormone.
12. The method of claim 11 wherein the induction or suppression is at least two fold.
13. The method of claim 11 wherein the culture of neural stem cells is incubated in the presence of the ovarian hormone for less than 24 hours in step (b).
14. The method of claim 11 wherein the culture of neural stem cells is incubated in the presence of the ovarian hormone for less than 12 hours in step (b).
15. The method of claim 11 wherein the culture of neural stem cells is incubated in the presence of the ovarian hormone for about 6 hours in step (b).
16. The method of claim 11 wherein the ovarian hormone is an estrogen.
17. The method of claim 11 wherein the ovarian hormone is a progestin.
18. The method of claim 11 wherein the ovarian hormone is a combination of estrogen and progestin.

19. A method of treating or ameliorating a neurodegenerative disease or condition in a mammal, comprising administering an effective amount of an ovarian hormone to the mammal.

5 20. The method of claim 19 wherein the disease or condition is brain injury.

21. The method of claim 19 wherein the brain injury is a stroke.

10 22. The method of claim 19 wherein the disease or condition is selected from the group consisting of Alzheimer's Disease, Multiple Sclerosis (MS), Huntington's Disease, Amyotrophic Lateral Sclerosis, and Parkinson's Disease.

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